Before the
**FEDERAL COMMUNICATIONS COMMISSION**
Washington, D.C. 20554

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| In the Matter of | ) | |
| | ) | |
| Office of Engineering and Technology Seeks | ) | ET Docket No. 17-340 |
| Comment on Technological Advisory Council | ) | |
| Spectrum Policy Recommendations | ) | |

**REPLY COMMENTS OF INMARSAT, INTELSAT CORPORATION, IRIDIUM CONSTELLATION LLC, SES AMERICOM, INC., AND TELESAT CANADA**

Inmarsat, Intelsat Corporation, Iridium Constellation LLC, SES Americom, Inc., and Telesat Canada (collectively, the "Satellite Parties") hereby reply to comments submitted in response to the Public Notice in the above captioned proceeding,[1] which seeks comment on the principles developed by the FCC's Technological Advisory Council ("TAC") in its Basic Spectrum Principles[2] document ("TAC Principles") to address interference.

The Satellite Parties note that, as an initial matter, there is general consensus among the commenters that the TAC Principles in their current form should not be adopted. Commenters either are of the view that the principles need further refinement[3] or believe that the principles should merely be considered as guidance as the Commission conducts its work[4].

[1] Office of Engineering and Technology Seeks Comment on Technological Advisory Council Spectrum Policy Recommendations, Public Notice DA 17-1165, released Dec. 1, 2017 ("Public Notice").
[2] December 2015 paper "Basic Principles for Assessing Compatibility of New Spectrum Allocations", *available at* https://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting121015/Principles-White-Paper-Release-1.1.pdf ("*White Paper*").
[3] *See* Comments of the Consumer Technology Association, ET Docket No. 17-340, filed Jan. 31, at 2.
[4] *See* Comments of CTIA, ET Docket No. 17-340, filed Jan. 31, 2018, at 6.

The Satellite Parties agree with EchoStar and Hughes that the Commission should proceed with care, because the proposed principles are very general and could be used to support spectrum decisions that are in conflict with the critical spectrum policy goals of technology neutrality, certainty, and flexibility.[5] As EchoStar and Hughes correctly note, general principles cannot substitute for careful deliberation on the particulars of each band, and existing operators must be able to rely on established approaches to sharing in each band.

The Satellite Parties also continue to believe that the implementation of risk-informed interference assessments in spectrum sharing decisions would require significant effort without increasing the objectivity of the results and that additional technical requirements for receivers are unnecessary.

## I. RISK-INFORMED INTERFERENCE ASSESSMENTS ARE NOT APPROPRIATE FOR DEFINING SHARING ENVIRONMENTS WITH NEW SERVICES

The Satellite Parties disagree with those commenters that argue that a risk-informed interference assessment ("RIIA") be developed for proceedings that seek to allow new services in specific spectrum.[6] While the ultimate purpose of providing objective information about both the potential severity and likelihood of certain interference is laudable, the parties ignore the fact that to achieve a reliable result a substantial amount of real-world information must be known. Such information will not be available for new services that have not yet been deployed, which is often the case in spectrum sharing proceedings. The information also may be unavailable in the public record because it is commercially sensitive. If an RIIA is required when the information

[5] Comments of EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC, ET Docket No. 17-340, filed Jan. 31, 2018.
[6] *See* Comments of Space Exploration Technologies Corp., ET Docket No. 17-340, filed Jan. 31, 2018 ("SpaceX Comments"); Comments of Wi-Fi Alliance, ET Docket No. 17-340, filed Jan. 31, 2018 ("Wi-Fi Alliance Comments"), at 8-9.

is not available, then the parties would have to make uninformed assumptions, which would introduce the very subjectivity that the RIIA is intended to avoid.

SpaceX, for example, restates the overly simplistic summary of the RIIA approach set out in the TAC's RIIA White Paper, which ignores the underlying complexity of identifying reliable information to input into the assessment. Item 1 in the summary simply states "Make an inventory of all significant interference 'hazard' modes".[7] As the TAC RIIA White Paper states, the inventory of potential interference scenarios requires a substantial amount of information about both the transmitting and victim services.[8] One example provided by the TAC defining interference between cellular handsets and TV receivers in adjacent channels identifies nine categories of inputs, the first of which is "[t]he level of received TV signal received, which depends on the power of the transmitter and the distance to the receiver."[9] This input can only be defined when the distance between the two components is known, which means the deployment of each system must be known. This simply will not be the case when evaluating the introduction of a new system into a spectrum band.

The Satellite Parties also disagree that the RIIA framework developed by the TAC's Satellite Communication Plan Working Group to assess interference among proposed non-geostationary orbit ("NGSO") satellite systems operating in the V-band should be used as a template for implementing RIIA in the Commission's decisions.[10] The assessment conducted by

[7] SpaceX Comments at 3.
[8] April 2015 paper, "A Quick Introduction to Risk-Informed Interference Assessment", available at http://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting4115/Intro-to-RIA-v100.pdf ("TAC RIIA White Paper").
[9] *Id*. at 4.
[10] SpaceX Comments at 4-5.

the Working Group did not incorporate the views of all stakeholders; therefore, it should not be viewed as an accurate representation of the potential interference environment.

The Satellite Operators also oppose SpaceX's opportunistic suggestion that the Commission consider opening a new docket to apply RIIA analysis to develop power limitations for uplink emissions of NGSO earth stations.[11] The Commission considered and rejected SpaceX's request for limits on NGSO earth station uplink emissions in its recent NGSO Report and Order.[12] SpaceX's request to re-open this issue constitutes an untimely petition for reconsideration of this decision and should be rejected on this basis. Furthermore, the evidence before the Commission in the NGSO R & O proceeding demonstrated that such limits are not only unnecessary, but they would reduce broadband capacity for certain designs and adversely affect the availability of services to the consumer.[13] The Commission concluded that it would be premature to adopt earth station power limits "given the variety of NGSO FSS system proposals and their potential to offer broadband services directly to consumers."[14] There is no basis for reconsideration of that decision.

## II. RECEIVER STANDARDS ARE NOT NECESSARY

Receiver standards for signal rejection or mandatory techniques for mitigating degradation from interference are not the right approach to reducing interference.[15] The Satellite Parties agree with Aviation Spectrum Resources Inc. ("ASR") that receiver designers should not

[11] *Id*. at 5.
[12] *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and related Matters*, 32 FCC Rcd. 7809, ¶ 55 (2017) ("NGSO R & O").
[13] Reply Comments of Telesat Canada, filed in IB Docket No. 16-408 (Apr. 10, 2017), at 15-17 (EIRP density limits for NGSO/FSS uplink transmissions are unnecessary as long as ITU Article 22 EPFD limits and coordination requirements are observed).
[14] NGSO R & O at ¶55.
[15] *See* Wi-Fi Alliance Comments at 5; *see also* Comments of GPS Innovation Alliance, ET Docket No. 17-340, filed Jan. 31, 2018.

be required to account for potential future events.[16] As ASR states, "Designing for the worst case will add substantial cost to equipment, without any guarantee that such additional engineering, development, and expense would have a payback for the manufacturer or end user."[17] The Commission's rules already impose an appropriate balance between the obligations of transmitters to limit the harmful interference they may cause and the extent to which receivers may claim protection from potential harmful interference.[18]

## III. CONCLUSION

The Satellite Parties continue to believe the Commission's rules and processes already reflect the most fundamental and important elements of the TAC principles. Additional requirements either in the form of receiver standards or RIIA analysis in spectrum sharing decisions will not materially improve the Commission's ability to limit harmful interference but would certainly increase the cost of defining a spectrum sharing environment and rolling out new and innovative services to American consumers.

[16] Comments of Aviation Spectrum Resources Inc., ET Docket No. 17-, filed Jan. 31, 2018, at 5.
[17] *Id*.
[18] Satellite Parties Comments at 4.

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